Supplemental Information
Course and Curriculum items
FS Academic Affairs Committee Review
January 19, 2016 Meeting

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College of Architecture, Planning, and Design (12-10-15)

Non-Expedited Proposals – Courses Numbered 000-599

Office of the Dean
(Environmental Design Studies Program)
New Course
Effective: Fall 2016
Impact on Other Units: None

Course:	**ENVD 200 Student Success Seminar**
Catalog Description:	Provides students with strategies for creating success in college and life. Topics to be covered include accepting personal responsibility, motivation, academic self-management, self-awareness, and life balance.
Credits:	(1)
Requisites:	None
When Offered:	Fall, Spring
K-State 8:	None
Rationale:	*This course has been offered for 4 semesters under our topics number (ENVD 299) to first-year APDesign students who are struggling at midterm or any student who feels they can use help with academic self-management. The course has been successful, so we would like to officially add it to the course catalog.*
Course:	**ENVD 204 Studio Seminar**
Catalog Description:	Seminar for students enrolled in ENVD 201. Topics related to studio and student success will be covered.
Credits:	(0)
Co-requisite:	ENVD 201
When Offered:	Fall
K-State 8:	None
Rationale:	*Studio Seminar will bring all students enrolled in ENVD 201 Environmental Design Studio 1 together to provide workshops related to design studio, as well as academic self-management strategies.*

College of Technology and Aviation (12-11-15)

NON-EXPEDITED COURSE ADDITIONS:
Courses Numbered 000-599

Engineering Technology

Primary Contact Person: Dr. Mark Jackson, Department Head
Phone: 785-826-7197
Email: mjjackson@ksu.edu

ADD: **CMST 183. Computer Systems Studio I**. (1) Fall. Students begin a portfolio of projects that connect the topics covered in CMST 103, CMST 135, required general education courses, and other relevant subjects. Two hours studio per week. Co.: CMST 103 and CMST 135.
K-State 8:
- None

RATIONALE: The goal of this course is to make it easier for the student to "connect the dots" between disparate topics and see the "why" behind them.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2016

ADD: **CMST 185. Computer Systems Studio II**. (1) Spring. Students add to their portfolios projects that connect the topics covered in CMST 137, CMST 247, past required CMST and general education courses, and other relevant subjects. Two hours studio per week. Pr.: CMST 183. Co.: CMST 137 and CMST 247.
K-State 8:
- None

RATIONALE: The goal of this course is to continue to have students "connect the dots" between topics they are learning in the content courses. In addition, students must build on skills learned in prior courses, thus reinforcing those skills.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2016

ADD: **CMST 283. Computer Systems Studio III**. (1) Fall. Students add to their portfolios projects that connect the topics covered in CMST 180, CMST 335, past required CMST and general education courses, and other relevant subjects. Two hours studio per week. Pr.: CMST 185. Co: CMST 180 and CMST 335.
K-State 8:
None

RATIONALE: The paradigm of connecting the dots, started in CMST 183 and CMST 185, is continued in this course.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2016

ADD: **CMST 333. Computer Systems Portfolio Defense**. (0) Spring. Each student must orally present and defend his or her portfolio of projects to the faculty. Satisfactory completion of this course is required for a student to continue in the BETB-CP degree. Pr.: CMST 283. Co.: CMST 334.

K-State 8:
- None

RATIONALE: This course is proposed to satisfy two issues: (1) how to deal with transfer students who may not have portfolios and (2) how to deal with students who are not ready academically for the polytechnic approach of the upper division classes. The second issue is satisfied by making this a gateway course – this course is a prerequisite to the BETB-CP junior level courses. The first issue is satisfied by keeping the content courses essentially as they are now. Many of these courses can presently be transferred in from the various community colleges in Kansas. Thus, a transfer student can enter K-State having these course credits satisfied. He or she may or may not have a portfolio. If not, then the student can develop the portfolio alone or by enrolling in one or more of the studio courses. Nevertheless, all students must pass the portfolio defense to continue in the major. Transfer students who do so without having taken the studio courses will have their studio credits waived.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2016

ADD: **CMST 383. Programming and Data Structures Studio**. (3-6) Fall. Students complete projects that tie together topics related to large application programming. Content topics include tools and methodologies for large program development, testing strategies, data structures and other relevant subjects. Nine hours studio per week. Pr.: CMST 333.
K-State 8:
- None

RATIONALE: The Engineering Technology Department's 2025 Strategic Action Plan calls for the incorporation of experiential learning, undergraduate research and entrepreneurial experience into its programs. The Computer Systems Technology faculty seeks to do this by moving the junior and senior students through a non-traditional model of courses that emphasize the completion of projects, applied research, class work and independent study.

This strategy will be implemented by replacing the required junior and senior courses with open-ended studio courses, in which students are required to complete significant projects that combine a variety of topics, both in computing and in the students' general education courses. These studios will be team taught. Students will learn fundamentals by completing "content modules," which are mini-courses in specific content areas. Each studio will have certain content modules required and others offered as electives so that each student learns a common core of fundamentals but has the ability to customize the experience according to his or her interests.

The upper-level studio courses have variable credit to allow flexibility for both students and faculty. For example, if a visiting professor offers a one-time 3-credit course in Cyber Security then students can take it and apply it to three credits of their studio. Transfer students can likewise apply appropriate courses to the studio credits.

This particular studio course will require all students to complete content modules on programming and data structures, content that is currently taught in the "programming language electives" and CMST 370, Applied Data Structures.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2016

ADD: **CMST 385. Systems and Database Administration Studio**. (3-6) Spring. Students complete projects that tie together topics related to systems and database administration. Content topics include advanced database, network infrastructure, security, multi-platform support, systems integration and other relevant subjects. Nine hours studio per week. Pr.:

CMST 383.
K-State 8:
- None

RATIONALE: Please refer to the rationale for CMST 383. This particular studio course will require all students to complete content modules on systems and database administration, content that is currently taught in various computer technology electives and CMST 420, Advanced Database Systems.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2016

ADD: **CMST 483. Emerging Technologies Studio**. (3-6) Fall. Students practice life-long learning and research methods by completing projects that combine previously learned material with newly emerging technologies that the students must research and analyze. Nine hours studio per week. Pr.: CMST 385.
K-State 8:
- None

RATIONALE: Please refer to the rationale for CMST 383. This particular studio course will require all students to complete content modules on research methods.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2016

ADD: **MET 225. Additive Manufacturing.** (3) Fall. The course develops an understanding of additive manufacturing (AM) principles and applications combined with a problem-based learning project which develops design, manufacturing and maintenance skill sets for AM practitioners. Two hours lecture and three hours lab per week.
K-State 8:
- Empirical and Quantitative Reasoning

RATIONALE: This course develops specialty knowledge to complete the content base of the proposed Certificate in Applied Manufacturing. It allows students to develop and leverage specialty skills in this rapidly-growing area of manufacturing. The course has the added advantage of drawing on interest in 3D printing to attract students to the program.

KS 8 RATIONALE: Students will be required to apply foundational technical and science-based knowledge to make decisions toward successful process implementation and product manufacture.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2016

NON-EXPEDITED COURSE MODIFICATIONS
Courses Numbered 000-599

Department of Engineering Technology

Primary Contact Person: Dr. Mark Jackson, Engineering Technology
Phone: 785-826-7197
Email: mjjackson@ksu.edu

FROM:

CMST 460. ~~Systems Analysis and Design.~~ (3) Fall. An in-depth study of software engineering methodologies for the analysis, design, and implementation of software systems. Topics include structured analysis and design, object-oriented analysis and design, implementation and testing strategies, and software principles and metrics. ~~Students work in teams to design, implement, and present a final capstone course project.~~ Pr.: ~~CMST 332 or CMST 334~~; and senior standing. ~~Co.: CMST 370~~.
K-State 8:
- Empirical and Quantitative Reasoning

TO:

CMST 460. Software Engineering. (3) Fall. An in-depth study of software engineering methodologies for the analysis, design, and implementation of software systems. Topics include project management, structured analysis and design, object-oriented analysis and design, implementation and testing strategies, and software principles and metrics. Pr.: CMST 383; and senior standing.
K-State 8:
- Empirical and Quantitative Reasoning

RATIONALE:

Software Engineering is a newer topic that encompasses Systems Analysis and Design. The class to date has emphasized the systems analysis and design topics that the students need to utilize in completing their senior projects, done in CMST 462. With the change in curriculum, students will be able to practice techniques in the corresponding studio course, freeing up time in CMST 460 for more software engineering topics. Software Engineering is a newer topic that encompasses Systems Analysis and Design. The class to date has emphasized the systems analysis and design topics that the students need to utilize in completing their senior projects, done in CMST 462. With the change in curriculum, students will be able to practice techniques in the corresponding studio course, freeing up time in CMST 460 for more software engineering topics.

IMPACT:

No impact on any other department. Approval has been received from Computing and Information Sciences per email from Scot DeLoach and Rodney Howell dated November 19, 2015.

EFFECTIVE DATE:

Fall 2016

FROM:

CMST 4~~62~~. Computer ~~Technology~~ Senior Project. (~~3~~) Spring. A sequel to CMST 460 in which students work individually or in teams to develop a significant project in their area of interest. Students are expected to apply the software engineering methodologies from CMST 460, write project documentation, and make verbal presentations. Whenever feasible, real-world projects are solicited from local businesses. Pr.: CMST 460.
K-State 8:
- Empirical and Quantitative Reasoning
- Ethical Reasoning and Responsibility

TO:

CMST 485. Computer Systems Senior Capstone Project. (6) Spring. A sequel to CMST 460 in which students work individually or in teams to develop a significant project in their area of interest. Students are expected to apply the software engineering methodologies from CMST 460, write project documentation, and make verbal presentations. Whenever feasible, real-world projects are solicited from local businesses. Nine hours studio per week. Pr.: CMST 460 and CMST 483.
K-State 8:
- Empirical and Quantitative Reasoning

- Ethical Reasoning and Responsibility

RATIONALE: We want the title to express the fact that this is a capstone experience. We want the course format to be consistent with the new studio courses being proposed by our department.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2016

NON-EXPEDITED UNDERGRADUATE CURRICULUM DELETIONS:

Department of Aviation

Primary Contact Person: Tara Harl
Airport Management Program Lead
Phone: 785-826-2622
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DROP: **Airport Management Certificate (CAMC)**

RATIONALE: Per industry expert input, the Airport Management graduate will be more marketable for an entry level positon by acquiring the industry standard of certification via the American Association of Airport Executives (AAAE) not via a university certificate.

IMPACT: There will be no impact to the student since the Airport Management Curriculum will still offer AVT 464- Airport Certified Manager a 1 hour lab that prepares students to take the first AAAE certification exam.

EFFECTIVE DATE: Fall 2016

Department of Engineering Technology

Primary Contact Person: Mark Jackson, Department Head
Phone: 785-826-7197
Email: mjjackson@ksu.edu

DROP: **Associate of Technology in Engineering Technology – Computer Systems option (AETA-CP)**

RATIONALE: This associate degree option is being discontinued in order to give preference to the associate degree option in Web Development (AETA-WD), which, according to the Bureau of Labor Statistics (www.bls.gov/ooh/computer-and-information-technology/web-developers.htm), is the typical degree for individuals pursuing a web development career.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2016

NON-EXPEDITED UNDERGRADUATE CURRICULUM MODIFICATIONS:

Department of Engineering Technology
Associate of Technology in Engineering Technology – Electronic and Computer Engineering Technology option (AETA-EC)

CURRENT: Electronic and computer engineering technology option (AETA-EC)		
6~~8~~ hours required for graduation		
Freshman		
Fall semester (1~~6~~ credit hours)		
~~COMM 105~~	~~Public Speaking 1A~~	~~2~~
ECET 100	Basic Electronics	4
ECET 250	Digital Logic	4
ENGL 100	Expository Writing I	3
ETA 020	Engineering Technology Seminar	0
MATH 100	College Algebra	3
Spring semester (16 credit hours)		
CHM 110	General Chemistry	3
CHM 111	General Chemistry Laboratory	1
CMST 103	~~Introduction to Program Design~~	3
ECET 101	Direct Current Circuits	3
~~ECET 110~~	~~Semiconductor Electronics~~	~~4~~
~~MATH 151~~	~~Applied Plane Trigonometry~~	~~2~~
Sophomore		
Fall semester (1~~8~~ credit hours)		
ECET 201	Alternating Current Circuits	4
~~ECET 210~~	~~Linear Circuit Applications~~	~~4~~
ENGL 302	Technical Writing	3
MATH 220	Analytic Geometry and Calculus I	4
	~~Humanities/Social Science elective~~	~~3~~
Spring semester (1~~8~~ credit hours)		
~~CMST 250~~	~~Networking I~~	~~3~~
ECET 240	Electronic Manufacturing	3
~~ECET 335~~	~~Industrial Control Topics~~	~~1~~
ECET 350	Microprocessor Fundamentals	4
MET 382	Industrial Instrumentation and Controls	3
PHYS 113	General Physics I	4

PROPOSED: Electronic and computer engineering technology option (AETA-EC)		
6<u>6</u> hours required for graduation		
Freshman		
Fall semester (1<u>7</u> credit hours)		
<u>COMM 106</u>	<u>Public Speaking 1</u>	<u>3</u>
ECET 100	Basic Electronics	4
ECET 250	Digital Logic	4
ENGL 100	Expository Writing I	3
ETA 020	Engineering Technology Seminar	0
MATH 100	College Algebra	3
Spring semester (16 credit hours)		
CHM 110	General Chemistry	3
CHM 111	General Chemistry Laboratory	1
CMST 103	<u>Computing Principles</u>	3
ECET 101	Direct Current Circuits	3
<u>CMST 250</u>	<u>Hardware and Network Fundamentals</u>	<u>3</u>
<u>MATH 150</u>	<u>Plane Trigonometry</u>	<u>3</u>
Sophomore		
Fall semester (1<u>6</u> credit hours)		
<u>ECET 110</u>	<u>Semiconductor Electronics</u>	<u>4</u>
ECET 201	Alternating Current Circuits	4
<u>ECET 335</u>	<u>Industrial Control Topics</u>	<u>1</u>
ENGL 302	Technical Writing	3
MATH 220	Analytic Geometry and Calculus I	4
Spring semester (1<u>7</u> credit hours)		
ECET 240	Electronic Manufacturing	3
ECET 350	Microprocessor Fundamentals	4
MET 382	Industrial Instrumentation and Controls	3
PHYS 113	General Physics I	4
<u>Humanities/Social Science elective</u>		<u>3</u>

RATIONALE: Per request from the ASB department removed MATH 151 and COMM 105 from the ECET curriculum; substituted it with MATH 150 and COMM 106. This increased the overall hours to 70. To keep it closer to the 60-hour target, we removed ECET 210; content will be absorbed into other ECET courses. Re-shuffled courses to even out semester loading.

IMPACT: Impacts ASB department: MATH 151 and COMM 105 removed from the ECET curriculum.

EFFECTIVE DATE: Fall 2016

Bachelor of Science in Engineering Technology – Electronic and Computer Engineering Technology option (BETB-EC)

CURRENT: Electronic and computer engineering technology option (BETB-EC)
12~~8~~ hours required for graduation

Freshman
Fall semester (1~~6~~ credit hours)
~~COMM 105 Public Speaking 1A ..... 2~~
ECET 100 Basic Electronics 4
ECET 250 Digital Logic 4
ENGL 100 Expository Writing I 3
ETA 020 Engineering Technology Seminar 0
MATH 100 College Algebra 3

Spring semester (16 credit hours)
CHM 110 General Chemistry 3
CHM 111 General Chemistry Laboratory 1
CMST 103 ~~Introduction to Program Design~~ 3
ECET 101 Direct Current Circuits 3
~~ECET 110 Semiconductor Electronics ..... 4~~
~~MATH 151 Applied Plane Trigonometry ..... 2~~

Sophomore
Fall semester (18 credit hours)
ECET 201 Alternating Current Circuits 4
~~ECET 210 Linear Circuit Applications ..... 4~~
ENGL 302 Technical Writing 3
MATH 220 Analytic Geometry and Calculus I 4
~~Humanities/Social Science elective ..... 3~~

Spring semester (1~~8~~ credit hours)
~~CMST 250 Networking I ..... 3~~
ECET 240 Electronics Manufacturing 3
~~ECET 335 Industrial Control Topics ..... 1~~
ECET 350 Microprocessor Fundamentals 4
MET 382 Industrial Instrumentation and Controls 3
PHYS 113 General Physics I 4

Junior
Fall semester (14 credit hours)
CMST 302 Applications in C Programming for Engineering Technology 3
ECET 304 Electric Power and Devices 3
ECET 352 Digital Circuits and Systems 4
MATH 221 Analytic Geometry and Calculus II 4

Spring semester (17 credit hours)
BUS 315 Supervisory Management 3
ECET 320 Electronic Communication Systems 4
ENGL 200 Expository Writing II 3
Humanities/Social Science elective 3
Science Elective with lab 4

Senior
Fall semester (14 credit hours)
ECET 430 Network Analysis 3
ECET 450 Digital Systems and Computer Architecture 4
ECET 480 Electronic Design I 1
Humanities/Social Science elective 3
Technical Elective 3

Spring semester (15 credit hours)
ECET 420 Communication Circuits Design 4
ECET 481 Electronic Design II 2
Humanities/Social Science elective 3
*Humanities/Social Science elective 3
Technical Elective 3

*Marked electives must be upper-level courses, 300 and above.

PROPOSED: Electronic and computer engineering technology option (BETB-EC)
126 hours required for graduation

Freshman
Fall semester (17 credit hours)
COMM 106 Public Speaking 1 3
ECET 100 Basic Electronics 4
ECET 250 Digital Logic 4
ENGL 100 Expository Writing I 3
ETA 020 Engineering Technology Seminar 0
MATH 100 College Algebra 3

Spring semester (16 credit hours)
CHM 110 General Chemistry 3
CHM 111 General Chemistry Laboratory 1
CMST 103 Computing Principles 3
ECET 101 Direct Current Circuits 3
CMST 250 Hardware and Network Fundamentals 3
MATH 150 Plane Trigonometry 3

Sophomore
Fall semester (16 credit hours)
ECET 110 Semiconductor Electronics 4
ECET 201 Alternating Current Circuits 4
ECET 335 Industrial Control Topics 1
ENGL 302 Technical Writing 3
MATH 220 Analytic Geometry and Calculus I 4

Spring semester (17 credit hours)
ECET 240 Electronics Manufacturing 3
ECET 350 Microprocessor Fundamentals 4
MET 382 Industrial Instrumentation and Controls 3
PHYS 113 General Physics I 4
Humanities/Social Science elective 3

Junior
Fall semester (14 credit hours)
CMST 302 Applications in C Programming for Engineering Technology 3
ECET 304 Electric Power and Devices 3
ECET 352 Digital Circuits and Systems 4
MATH 221 Analytic Geometry and Calculus II 4

Spring semester (17 credit hours)
BUS 315 Supervisory Management 3
ECET 320 Electronic Communication Systems 4
ENGL 200 Expository Writing II 3
Humanities/Social Science elective 3
Science Elective with lab 4

Senior
Fall semester (14 credit hours)
ECET 430 Network Analysis 3
ECET 450 Digital Systems and Computer Architecture 4
ECET 480 Electronic Design I 1
Humanities/Social Science elective 3
Technical Elective 3

Spring semester (15 credit hours)
ECET 420 Communication Circuits Design 4
ECET 481 Electronic Design II 2
Humanities/Social Science elective 3
*Humanities/Social Science elective 3
Technical Elective 3

*Marked electives must be upper-level courses, 300 and above.

RATIONALE: Per request from the ASB department removed MATH 151 and COMM 105 from the ECET curriculum; substituted it with MATH 150 and COMM 106. This increased the overall hours to 130. To keep it closer to the 120-hour target, we removed ECET 210; content will be absorbed into other ECET courses. Re-shuffled courses to even out semester loading.

IMPACT: Impacts ASB department: MATH 151 and COMM 105 removed from the ECET curriculum.

EFFECTIVE DATE: Fall 2016

Associate of Technology in Engineering Technology – Web Development Technology Option (AETA-WD)

Current: Web development technology option (AETA- WD)	**Proposed: Web development technology option (AETA- WD)**
6~~6~~ hours required for graduation	62 hours required for graduation
Major requirements (3~~9~~ credit hours)	**Major requirements (33 credit hours)**
~~Core courses **(33 credit hours)**~~	CMST 103 Computing Principles 3
~~CMST 102 Introduction to Computer Technology ..... 3~~	CMST 135 Web Fundamentals 3
CMST 103 ~~Introduction to Program Design~~ 3	CMST 137 Fundamentals of Visual Literacy 3
~~CMST 130 Introduction to PC Administration ..... 3~~	CMST 180 Introduction to Database Systems 3
CMST 135 Web ~~Page Development I~~ 3	CMST 183 Computer Systems Studio I 1
CMST 137 Fundamentals of Visual Literacy 3	CMST 185 Computer Systems Studio II 1
~~CMST 155 Web Page Development II ..... 3~~	CMST 247 Programming I 3
CMST 180 Introduction to Database Systems 3	CMST 250 Hardware and Network Fundamentals 3
CMST 247 ~~Java~~ Programming I 3	CMST 252 System and Software Fundamentals 3
CMST 250 ~~Networking I~~ 3	CMST 283 Computer Systems Studio III 1
CMST 332 Web Development Project 3	CMST 315 Introduction to System Administration 3
CMST 335 ~~Web~~ Programming 3	CMST 333 Computer Systems Portfolio Defense 0
~~ETA 020 Engineering Technology Seminar ..... 0~~	CMST 332 Web Development Project 3
	CMST 335 Programming II 3
~~Programming language electives (6 credit hours)~~	*Other courses may be used if approved by the AETA-WD program coordinator.*
~~Choose two courses from:~~	
~~CMST 310 Visual Basic Programming ..... 3~~	**Other requirements (29 credit hours)**
~~CMST 317 C# Programming ..... 3~~	COMM 106 Public Speaking I 3
~~CMST 341 C++ Programming ..... 3~~	EDCEP 111 University Experience 1
~~CMST 347 Java Programming II ..... 3~~	ENGL 100 Expository Writing I 3
Other ~~programming electives~~ may be used if approved by the AETA-WD program coordinator.	ENGL 302 Technical Writing 3
	Mathematics requirement* 3
Other requirements (2~~7~~ credit hours)	Humanities/Social Science/Business elective 3
~~COMM 105 Public Speaking IA ..... 2~~	Humanities/Social Science/Business elective 3
ENGL 100 Expository Writing I 3	Humanities/Social Science/Business elective 3
ENGL 302 Technical Writing 3	Science elective 4
Mathematics requirement* 3	Unrestricted elective 3
~~BUS 110 Introduction to Business ..... 3~~	
~~ECON 110 Principles of Macroeconomics ..... 3~~	* Choose from MATH 100, MATH 150, MATH 205 or MATH 220.
Humanities/Social Science/Business elective 3	
~~Humanities/Social Science elective ..... 3~~	
Science elective ~~with lab~~ 4	
* Choose from MATH 100, MATH 150, MATH 205 or MATH 220.	

RATIONALE: Concurrent to this proposal is a proposal to revise the Bachelor of Science option in Computer Systems Technology. This proposal would change the Associate of Science option in Web Development Technology to align with the bachelor's degree so as to allow student's receiving the A. T. degree to continue on to the four-year degree.

According to the Bureau of Labor Statistics web site (www.bls.gov/ooh/computer-and-information-technology/web-developers.htm) web development is a career that requires

only an Associate's Degree; demand for web developers is expected to grow 20% (faster than the average of all occupations) over the next ten years. It is also a career that appeals to individuals who have degrees but need additional marketable skills.

IMPACT: This proposal has been shared with the following departments in the college of Technology and Aviation:

- Arts, Sciences and Business (emailed to Dept. head October 5, 2015)
- Aviation (emailed to Dept. head October 5, 2015)

College of Engineering:

- Computer and Information Sciences (emailed to Undergraduate Curriculum Coordinator October 13, 2015)

Favorable responses have been received from individual faculty members in the former two departments. Questions from them about specific requirements have been addressed.

EFFECTIVE DATE: Fall 2016

Bachelor of Science in Engineering Technology – Computer Systems Technology Option (BETB-CP)

Current: Computer systems technology option (BETB-CP)	**Proposed: Computer systems technology option (BETB-CP)**
124 hours required for graduation	120 hours required for graduation
(66 hours associate degree + 58 additional hours)	(62 hours associate degree + 58 additional hours)
Major requirements (63 credit hours)	**Major requirements (60 credit hours)**
~~Core courses (39 credit hours)~~	CMST 103 Computing Principles 3
~~CMST 102 Introduction to Computer Technology .....3~~	CMST 135 Web Fundamentals 3
CMST 103 ~~Introduction to Program Design~~ 3	CMST 137 Fundamentals of Visual Literacy 3
~~CMST 130 Introduction to PC Administration .....3~~	CMST 180 Introduction to Database Systems 3
CMST 135 Web ~~Page Development I~~ 3	CMST 183 Computer Systems Studio I 1
CMST 180 Introduction to Database Systems 3	CMST 185 Computer Systems Studio II 1
CMST 247 ~~Java~~ Programming I 3	CMST 247 Programming I 3
CMST 250 ~~Networking I~~ 3	CMST 250 Hardware and Network Fundamentals 3
CMST 334 Computer ~~Technology~~ Project ~~Development~~ 3	CMST 252 System and Software Fundamentals 3
	CMST 283 Computer Systems Studio III 1
CMST 335 ~~Web~~ Programming 3	CMST 315 Introduction to System Administration 3
~~CMST 370 Applied Data Structures .....3~~	CMST 333 Computer Systems Portfolio Defense 0
~~CMST 420 Advanced Database Systems .....3~~	CMST 334 Computer Systems Project 3
CMST 460 ~~Systems Analysis and Design~~ 3	CMST 335 Programming II 3
CMST 4~~6~~2 Computer ~~Technology~~ Senior Project .....~~3~~	CMST 383 Programming & Data Structures Studio* .. 3-6
~~ETA 020 Engineering Technology Seminar .....0~~	CMST 385 Systems and Database Admin Studio* 3-6
	CMST 460 Software Engineering 3
~~Programming language electives (6 credit hours)~~	CMST 483 Emerging Technologies Studio* 3-6
~~Choose two courses from:~~	CMST 485 Computer Systems Senior Capstone Project 6
~~CMST 310 Visual Basic Programming .....3~~	*Other courses may be used if approved by the BETB-CP program coordinator.*
~~CMST 317 C# Programming .....3~~	
~~CMST 341 C++ Programming .....3~~	**Math requirements (9 credit hours)**
~~CMST 347 Java Programming II .....3~~	*Choose from these courses:*
Other ~~programming electives~~ may be used if approved by the BETB-CP program coordinator.	MATH 100 College Algebra 3
	MATH 150 Plane Trigonometry 3
~~Computer systems technology electives (9 credit hours)~~	MATH 205 General Calculus and Linear Algebra 3
~~Choose three courses from:~~	MATH 220 Analytic Geometry and Calculus I 4
~~CMST 155 Web Page Development II .....3~~	MATH 221 Analytic Geometry and Calculus II 4
~~CMST 270 Introduction to Unix .....3~~	MATH 222 Analytic Geometry and Calculus III 4
~~CMST 310 Visual Basic Programming .....3~~	*Other math courses may be used if approved by the BETB-CP program coordinator.*
~~CMST 315 Networking II .....3~~	
~~CMST 317 C# Programming .....3~~	**Other requirements (51 credit hours)**
~~CMST 323 Game Programming .....3~~	

~~CMST 341 C++ Programming ..... 3~~
~~CMST 344 Internetworking ..... 3~~
~~CMST 347 Java Programming II ..... 3~~
~~CMST 350 Unix Administration ..... 3~~
~~CMST 355 Network Programming ..... 3~~
~~CMST 362 Introduction to Business Programming ..... 3~~
~~CMST 410 Operating Systems ..... 3~~
~~CMST 412 Software Architecture & Design ..... 3~~
~~CMST 445 Network Security ..... 3~~
~~CMST 470 Applied Algorithm Design ..... 3~~
~~COT 495 Industrial Internship ..... max. 3~~
~~ECET 350 Microprocessor Fundamentals ..... 4~~
~~*Other electives may be used if approved by the ETA-CP program coordinator.*~~

~~Advanced Computer Technology Electives (9 credit hours)~~
~~*Choose one of the following tracks:*~~
~~Programming Track (~~*~~choose any three courses~~~~):~~**
~~CMST 355 Network Programming ..... 3~~
~~CMST 410 Operating Systems ..... 3~~
~~CMST 412 Software Architecture & Design ..... 3~~
~~CMST 470 Applied Algorithm Design ..... 3~~
~~Networking Track (~~*~~choose any three courses~~~~):~~**

~~CMST 344 Internetworking ..... 3~~
~~CMST 350 Unix Administration ..... 3~~
~~CMST 355 Network Programming ..... 3~~
~~CMST 410 Operating Systems ..... 3~~
~~CMST 445 Network Security ..... 3~~

Math requirements (9 credit hours)
~~*Choose three of these four options:*~~
MATH 100 College Algebra 3
MATH 150 Plane Trigonometry 3
~~or~~
~~MATH 151 Applied Plane Trigonometry (2)~~
MATH 205 - General Calculus and Linear Algebra 3
~~or~~
MATH 220 - Analytic Geometry and Calculus I 4
MATH 221 Analytic Geometry and Calculus II 4
Other math courses may be used if approved by the BETB-CP program coordinator.

Other requirements (~~52~~ credit hours)
~~COMM 105 Public Speaking IA ..... 2~~
ENGL 100 Expository Writing I 3
ENGL 200 Expository Writing II 3
ENGL 302 Technical Writing 3
PHILO 105 Introduction to Critical Thinking 3
PHILO 390 Business Ethics 3
STAT 325 Elements of Statistics 3
Business elective 3
Business elective~~**~~ 3
Humanities/Social Science elective 3
Humanities/Social Science elective~~**~~ 3
~~Humanities/Social Science/Business elective ..... 3~~
~~Humanities/Social Science/Business elective ..... 3~~
~~Humanities/Social Science/Business elective ..... 3~~
Humanities/Social Science/Business elective** 3
Science elective ~~with lab~~ 4
Science elective ~~with lab~~ 4
COMM 106 Public Speaking I 3
EDCEP 111 University Experience 1
ENGL 100 Expository Writing I 3
ENGL 200 Expository Writing II 3
ENGL 302 Technical Writing 3
PHILO 105 Introduction to Critical Thinking 3
PHILO 390 Business Ethics 3
STAT 325 Elements of Statistics 3
Business elective 3
Business elective 3
Humanities/Social Science elective 3
Humanities/Social Science elective 3
Humanities/Social Science/Business elective** 3
Science elective 4
Science elective 4
Unrestricted elective 3
Unrestricted elective 3

* Students may substitute up to 9 credits of studio with appropriate courses as approved by the BETB-CP program coordinator.

** Marked elective must be upper division course, 300 and above.

** Marked electives must be upper division courses, 300 and above.	

RATIONALE:

The 2025 Strategic Action Plan for K-State Polytechnic calls for "experiential learning in 100% of degree programs" as a long term key outcome. The Engineering Technology Department's 2025 Strategic Plan calls for the incorporation of experiential learning, undergraduate research and entrepreneurial experience into its programs. The Computer Systems Technology faculty seeks to do this through a significant revision of its Bachelor of Science degree option in Computer Systems Technology.

In designing this proposal, the faculty sought to achieve these goals.

1. To retain a unique strength in the current degree in that it aligns very well with 2-year computing degrees in Kansas. This makes our degree a logical next step toward a Bachelor of Science degree for those students who spend their first two years at a Kansas community college.

2. To retain a unique strength in the current degree in the successful student emerges with a working knowledge that makes him or her employable in both large computer programming units and small businesses where he or she may be the only computer expert. This has resulted in our placement rate to be well above 90%.

3. To increase the level of ability of students entering the junior and senior years of the program.

4. To move the junior and senior students through a non-traditional model of courses that emphasize the completion of projects, applied research, class work and independent study.

5. To give the freshman and sophomore students a taste of "experiential learning" while still teaching them the basics and allowing for less stringent admission requirements than used for juniors and seniors.

To satisfy goals 1 and 5, the topics covered for the first two years of the degree have been left, more or less, unchanged. This allows transfer students into the program through the traditional mechanism of counting course credits. It also allows freshman to transition to college-level work before being hit with an all-out "experiential" paradigm. Experiential learning is provided to freshman and sophomores through studio courses that students take concurrently with topics courses. The topics courses teach fundamentals and use traditional student assessment techniques of homework and tests to measure student achievement. The studio courses allow the students to "connect the dots" between topics they are learning in the content courses. In addition, students are required to remember and apply skills learned in prior courses.

Goal 2 is achieved by continuing to emphasize four content tracks: programming, database, networking and web design. Computer electives for freshman and sophomores have been eliminated and the topics reorganized so that the successful student reaches a milestone at the end of each academic year. Specifically, at the end of the freshman year, the successful student will be able to program an application on an appropriate platform, currently a web site. During the sophomore year, the successful student will add the ability to administer the platform on which the application runs.

Goal 3 is achieved by a gateway course (CMST 333, Computer Systems Portfolio Defense) which all students must pass as a prerequisite to the junior and senior courses.

Goal 5 is achieved by replacing the required junior and senior courses with open-ended studio courses, in which students are required to complete significant projects that combine a variety of topics, both in computing and in the students' general education courses. These studios will be team taught. Students will learn fundamentals by completing "content modules," which are mini-courses in specific content areas. Each studio will have certain content modules required and others offered as electives so that

each student learns a common core of fundamentals but has the ability to customize the experience according to his or her interests.

These curriculum changes have been made in consultation with the Industry Advisors for the Computer Systems Technology degree.

IMPACT: This proposal has been shared with the following departments in the college of Technology and Aviation:

- Arts, Sciences and Business (emailed to Dept. head October 5, 2015)
- Aviation (emailed to Dept. head October 5, 2015)

College of Engineering:

- Computer and Information Sciences (emailed to Undergraduate Curriculum Coordinator October 13, 2015)

Favorable responses have been received from individual faculty members in the former two departments. Questions from them about specific requirements have been addressed.

EFFECTIVE DATE: Fall 2016

NON-EXPEDITED UNDERGRADUATE CERTIFICATE ADDITION:

Department of Engineering Technology

Primary Contact Person: Dr. Mark Jackson, Engineering Technology
Phone: 785-826-7197
Email: mjjackson@ksu.edu

Program Contact Person: Julia Morse, Mechanical Engineering Technology Program Coordinator
Phone: 785-826-2650
Email: jmorse@ksu.edu

PROPOSED:
Certificate in Applied Manufacturing
17 credit hours required for completion

The Certificate of Applied Manufacturing provides entry-level or career-changing students the option of immersing themselves in the principles and practice of manufacturing. The certificate can be issued as a stand-alone qualification, or can be used to gain entry to the Associate's, or Bachelor's, degree in engineering technology, mechanical engineering technology option.

Course Requirements

Minimum cumulative grade point average of 2.5 is required on courses applied to a certificate, and a grade of "C" or better is required in all coursework. All courses applied to the certificate must have letter grades. Courses with grades of "Credit" or "Pass" will not be applicable. No more than 25% of total credit hours required for the certificate may be transfer credits.

This is a free-standing certificate; it may be earned without participation in or completion of a degree program.

Required Courses (17 hours)

MET 111	Technical Graphics	3
MET 121	Manufacturing Methods	3
MET 117	Mechanical Modeling and Detailing	3
MET 125	Computer-Numerical-Controlled Machine Processes	2
MET 231	Physical Materials and Metallurgy	3
MET 225	Additive Manufacturing	3

RATIONALE: The proposed Certificate in Applied Manufacturing is consistent with the Board approved mission statement of the institution that includes the statement, "The mission of Kansas State University is to foster excellent teaching, research, and service that develop a highly skilled and educated citizenry necessary to advancing the well-being of Kansas, the nation, and the international community." The certificate responds to the need for skilled engineering and technology professionals with experience in applying both emerging and state-of-the-art computer-based manufacturing processes. Courses teach and require not only technical skill, but also communication and professionalism techniques expected in the execution of manufacturing applications, and science-based foundations required for application troubleshooting, growth, and expansion.

In particular, the certificate has found interest with the central pilot scheme of the 'Troops-to-Technology Workforce Development Initiative', which is an accelerated pathway to service member employment into manufacturing industries. The central pilot scheme is based at Fort Riley, Kansas, and the initiative is a partnership between BMNT Partners of Palo Alto, CA and the Oak Ridge Association of Universities (ORAU) to provide training and employment

opportunities for soldiers leaving service to enter the industrial workforce. The scheme is an extension of President Obama's creation of a national network of manufacturing institutes (NNMI) and includes partners such as the Department of Energy, ORAU, KSU and BMNT Partners. The applied manufacturing pilot program at Fort Riley is a partnership between Fort Riley and Kansas State University. The purpose of the pilot program is to offer between 50-100 transitioning soldiers/veterans in the first year beginning Spring 2016 and will expect soldiers/veterans to use their GI Bill funds to pay for the applied manufacturing certificate and further studies at Kansas State University using the stacking credential principle. Documentation of Fort Riley's involvement in the development and endorsement of the proposed program is attached as Appendix C.

The sequence of courses has the added benefit of giving entry-level students a taste of the applications area of manufacturing and mechanical engineering technology, which can be continued toward an Associate's degree in Technology or Bachelor of Science degree in Engineering Technology – Mechanical Engineering Technology Option.

The proposed program is aligned with the University's strategic plan and the K-State 2025 Strategic Action and Alignment Plan for K-State Polytechnic which sites a key activity for the undergraduate experience theme as the ability to "provide undergraduate degree programs that are relevant, effective (high impact learning), accessible, and valuable." The certificate in applied manufacturing will act as the first step towards providing accessible, stackable qualifications that soldiers/veterans—or any career-changing or career-growing individual--will use in the workforce, valuable to themselves and to society at large.

The program capitalizes on University resources by making use of courses that are already being taught regularly as part of Mechanical Engineering Technology programs.

Student Demand for the Certificate:
Currently, the demand is estimated to be 50-100 transitioning soldiers per year.

Estimated Budget and Staff Required:
On the Polytechnic campus, all but one of the certificate courses are already offered in support of our AETA-MT and BETB-MT degrees.

Special initiatives may allow us to offer the program at alternative locations. In such cases, a cost/benefit study would need to be completed before being offered.

IMPACT: The Industrial and Manufacturing Systems Engineering Department has been consulted and has provided its approval, as documented in Appendix B.

ASSESSMENT PROCEDURES: The assessment plan is attached as Appendix D.

EFFECTIVE DATE: Fall 2016

APPENDIX A: Notification and approval of The Bachelor of Science in Aeronautical Technology, Aviation Maintenance Management program lead on changes to MET 111 Technical Graphics which might affect their program.

Stephen Ley

Fri 3/20/2015 5:50 PM

Inbox

To:Julia Morse <jmorse@ksu.edu>;

I appreciate your concern and AVM involvement in this process. These are good changes and believe will only solidify alignment between the desired outcomes between our two programs.

Sent from my iPhone
Stephen Ley

On Mar 20, 2015, at 4:27 PM, Julia Morse <jmorse@ksu.edu> wrote:

> Stephen, MET is proposing changes to the MET 111 Technical Graphics course, attached. The main change is to remove a corequisite of MATH 100, which is not necessary to meet the outcomes of the course. The intent of the corequisite removal is to increase accessibility to entry-level and part-time students.
>
> Also, wording of the description has been adjusted to better describe existing SLO's and intent.
>
> I have attached a draft of the course change proposal.
>
> Though the course content and SLO's have not really changed, you will want to make sure the changes in wording still support the objectives of your BATN-AM program and students.
>
> Thanks!

APPENDIX B: Notification and approval of Dr. Bradley Kramer, Head of the Department of Industrial & Manufacturing Systems Engineering and Director of the Advanced Manufacturing Institute

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From: Bradley Kramer
Sent: Wednesday, October 7, 2015 11:39 AM
To: Mark Jackson
Subject: RE: Draft Advanced Manufacturing Certificate Proposal

Not sure what you need for approval, but the IMSE department would not object to your offering a Certificate in Applied Manufacturing. Do you need that in a letter or will this email suffice?

Brad

Bradley A. Kramer, Ph.D.
Professor and Head, Industrial & Manufacturing Systems Engineering
Ike and Letty Evans Engineering Chair
Director, Advanced Manufacturing Institute

2038 Durland Hall
1701A Platt St
Department of Industrial and Manufacturing Systems Engineering
Kansas State University
Manhattan, KS 66506

Email: bradleyk@ksu.edu
Voice: (785) 532-5606
Fax: (785) 532-3738

APPENDIX C: Letter of support of Colonel Andrew Cole, Jr., Garrison Commander, Fort Riley

DEPARTMENT OF THE ARMY
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT RILEY
405 PERSHING COURT
FORT RILEY, KS 66442

October 19, 2015

Directorate of Human Resources

Dr. Mark Jackson
Kansas State University
2310 Centennial Road
Salina, KS 67401

Dear Dr. Jackson,

I am pleased to offer my support to Kansas State University in their Applied Manufacturing Certificate proposal and any programs that assist Soldiers as they transition to civilian life. Fort Riley, Kansas is the home of the 1st Infantry Division and each year, several thousand highly qualified Soldiers transition from the Army to the civilian sector. Among these outstanding Soldiers are many who have extensive experience working on highly technical equipment and who have a natural affinity for the technology and engineering fields.

Although we cannot guarantee a precise enrollment number, we believe initial demand for a program such as this will increase as this program gains recognition among our transitioning Soldiers. Additionally, offering the required classes during evening and weekend hours would maximize opportunities for Soldiers to participate in the program.

Kansas State University created a promising educational opportunity for Fort Riley Soldiers with this Applied Manufacturing Certificate. We fully support all programs that provides quality educational opportunities to our transitioning Soldiers and will inform our Soldiers regarding this unique educational opportunity.

Sincerely,

Andrew Cole, Jr.
Colonel, US Army
Garrison Commander

Certificate in Applied Manufacturing Program
Assessment of Student Learning Plan
K-State Polytechnic

A. College, Department, and Date

College: K-State Polytechnic, College of Technology and Aviation
Department: *Engineering Technology*
Date: *10/09/15*

B. Contact Person(s) for the Assessment Plans

Morse Julia, Associate Professor
Dandu Raju, Professor

Program

Certificate in Applied Manufacturing

Mission Statements

Engineering Technology Mission Statement

Approved by the Engineering Technology Faculty April 4, 2000

The Engineering Technology Department provides educational opportunities for students in a comprehensive range of engineering technology, computer science technology, and related technical disciplines. The Engineering Technology faculties are committed to delivering quality undergraduate education to students in programs offered in the department. The department provides instruction, technical assistance, and applied research expertise in these disciplines to the local, state, regional, and international communities.

Certificate in Applied Manufacturing Mission Statement

Essential to the larger mission of engineering technology department, the certificate option in Applied Manufacturing prepares entry-level or career-changing students to practice technician-level skills and knowledge to meet state-of-the-art and emerging industry needs in the areas of manufacturing.

Assessment of Student Learning

1. Program Educational Objective:

(PEOs are broad statements that describe the career and professional accomplishments that certificate in applied manufacturing is preparing certificants to achieve.)

A. Prepare certificants with entry-level technician skills or career-changing technical skills and knowledge to meet industry needs in the area of manufacturing.

(For ease of management, PEO and Student Learning Outcomes are thematically and alphanumerically aligned with related PEOs and SOs of the broader ETA-MT and BET-MT programs.)

2. Student Learning Outcome:

(SOs are narrower statements that describe what students are expected to know and be able to do by the time of certification. These relate to the skills, knowledge, and behaviors that students acquire in their matriculation through the certificate in applied manufacturing *program*.) The SOs related to the program educational objectives (underlined) are as follows:

Prepare certificants with entry-level technician skills or career-changing technical skills and knowledge to meet industry needs in the area of manufacturing.

A1. Apply principles of engineering materials.
A2. Apply the technologies of manufacturing processes.
A3. Apply concepts of technical graphics, computer-aided drafting, design, modeling, and manufacturing.

3. Performance Criteria:

Assessment Methods

A combination of direct and indirect measures are applied:

Direct: Sampling of homework or exam problems, or applicable sections of project or presentation evaluation rubrics.
Indirect: Student surveys of course outcomes.

Achievement Targets

For scoring methods:

High end: At least 10% of students achieve 90% or better.
Mid-range: At least 50% of students achieve 80% or greater score.
Low end (Baseline criteria): At least 80% of students achieve 70% or greater score.

For surveys methods:

High end: At least 10% of students rate "highly understood (5)"
Mid-range: At least 50% of students rate "(4)" (between moderately and highly understood) or higher.
Low end: At least 80% of students rate "moderately understood (3)" or higher.

Timeline of Collection

Collection of data has been distributed according to Table 1.

Evaluation of Data

Data is summarized over the summer and early fall following the academic year in which it is collected (according to the Table 1).

Table 1. Assessment Timetable

Semester	Sample (Course)	Outcome Assessed	Year of Collection 2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	Instructor/Coordinator
A1. Apply principles of engineering materials.									
Fall	MET 231	A1	X	X	X	X	X	X	Morse
Spring	MET 225	A1	X	X	X		X		Jackson
A2. Apply technologies of manufacturing processes.									
Fall	MET 121	A2	X	X	X	X	X	X	Morse
Spring	MET 125	A2	X	X		X		X	Morse
Spring	MET 225	A2	X	X	X	X	X	X	Jackson
A3. Apply concepts of technical graphics, computer-aided drafting, design, modeling, and manufacturing.									
Fall	MET 111	A3	X	X	X	X	X	X	Leaf/Morse
Spring	MET 117	A3	X	X	X	X	X	X	Leaf/Morse
Spring	MET 225	A3	X	X		X		X	Jackson

Table 2. Course Alignment Matrix

For each stated student learning outcome (SO), the table indicates which courses emphasize opportunity for the student to learn the outcome and where student achievement of the outcome is assessed.

Courses		Certificate Program Student Learning Outcomes (SOs) Covered		
		A1	A2	A3
MET 111	Technical Graphics			✓
MET 121	Manufacturing Methods	✓	✓	
MET 231	Physical Materials and Metallurgy			
MET 117	Mechanical Modeling & Detailing		✓	✓
MET 125	Computer-Numerical Controlled Machine Processes		✓	✓
MET 225	Additive Manufacturing	✓	✓	✓

Table 3. Relationship to K-State Student Learning Outcomes

	University-wide SLOs (Undergraduate Programs)				
Program SOs	Knowledge	Critical Thinking	Communication	Diversity	Academic / Professional Integrity
A1, A2, A3	X		X		